

Changes of Claims Shown by Markings

What is claimed is:

1. (twice amended) In a method for configuring a standing-wave cavity arrangement for solid-state lasers in obtaining stable single-mode operation, whereby overcoming the major difficulty, with intracavity frequency conversions, typically in frequency doubling caused by the so-called "green problem", comprising the steps of
 - (1) constructing a forming means for said cavity, including at least two end mirrors;
 - (2) constructing a pump head means placed within said cavity for lasing at a fundamental wavelength; comprising the steps of
 - A. selecting a solid-state laser medium means;
 - B. selecting a pump source means including laser diode bars to provide relevant pumping beams for pumping said laser medium means; and
 - C. producing a gain region within said laser medium means by said pumping beams;
 - (3) constructing a formation of wavelength selectivity with low insertion losses placed within said cavity, wherein the performance parameters of said formation are predetermined whereby to sufficiently and uniquely determine the laser's oscillating frequency and to force the laser to perform a stable single-mode or narrow band operation; and
 - (4) selecting an approach for promoting single longitudinal mode operation [eliminating or minimizing the spatial hole-burning effect] from the group consisting of
 - A. a first approach, [comprising
 - 1)] creating said gain region within a narrow area along the optical axis of said cavity and immediately adjacent to one of said end mirrors, and
 - 2) selecting said formation from the group consisting of
 - a) a first formation comprising a monochromatic polarizer means,
 - b) a second formation, built up of a Lyot filter and a one-dimensional beam expander means, and
 - c) a third formation, built up of a spectral filter means including at least one spectral filter, and a two-dimensional beam expander means to reduce insertion losses for said spectral filter means substantially; and
 - d) a fourth formation comprising an etalon; and]
 - B. a second approach, comprising
 - 1) placing said pump head means between a pair of quarter-wave plates whereby producing the "twisted mode" operation, and

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-- The clean version of the entire set of pending claims to replace the original claims issued on 4-16-2002.

What is claimed is:

1. (twice amended) In a method for configuring a standing-wave cavity arrangement for solid-state lasers in obtaining stable single-mode operation, whereby overcoming the major difficulty with intracavity frequency conversions, typically in frequency doubling caused by the so-called "green problem", comprising the steps of
 - (1) constructing a forming means for said cavity, including at least two end mirrors;
 - (2) constructing a pump head means placed within said cavity for lasing at a fundamental wavelength; comprising the steps of
 - A. selecting a solid-state laser medium means;
 - B. selecting a pump source means including laser diode bars to provide relevant pumping beams for pumping said laser medium means; and
 - C. producing a gain region within said laser medium means by said pumping beams;
 - (3) constructing a formation of wavelength selectivity with low insertion losses placed within said cavity, wherein the performance parameters of said formation are predetermined whereby to sufficiently and uniquely determine the laser's oscillating frequency and to force the laser to perform a stable single-mode or narrow band operation; and
 - (4) selecting an approach for promoting single longitudinal mode operation from the group consisting of
 - A. a first approach, creating said gain region within a narrow area along the optical axis of said cavity and immediately adjacent to one of said end mirrors, and
 - B. a second approach, comprising
 - 1) placing said pump head means between a pair of quarter-wave plates whereby producing the "twisted mode" operation, and
 - 2) building said formation up of a spectral filter means consisting of at least one spectral filter, and a beam expander means to reduce insertion losses for said spectral filter means substantially.
2. (amended & added) In the method of claim 1, wherein said approach is said first approach, said formation including
 - (1) a first formation comprising a monochromatic polarizer means,
 - (2) a second formation, built up of a Lyot filter and a one-dimensional beam expander means,